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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/797,001	03/11/2004	Julian G. Balsdon	118920	3880
25944	7590	04/14/2005	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			VERDIER, CHRISTOPHER M	
			ART UNIT	PAPER NUMBER
			3745	

DATE MAILED: 04/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)
	10/797,001	BALSDON, JULIAN G.
Examiner	Art Unit	
Christopher Verdier	3745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_.
- 2a) This action is FINAL.                            2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 1-16 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_ is/are allowed.
- 6) Claim(s) 1-16 is/are rejected.
- 7) Claim(s) \_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 11 March 2004 is/are: a) accepted or b) objected to by the Examiner.
 

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) All    b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date 3-11-04.
- 4) Interview Summary (PTO-413)  
 Paper No(s)/Mail Date. \_\_\_\_.
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: \_\_\_\_.

*Drawings*

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the substantially cylindrical pressure vessel (claim 6), the substantially frusto-conical pressure vessel (claim 7), the at least two sealing strips being aligned substantially in the axial direction of the pressure vessel (claims 8-9), and the at least two sealing strips being aligned substantially at an angle to the axial direction of the pressure vessel (claims 10-11) must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Specification***

The abstract of the disclosure is objected to because it contains the phrase "The invention relates to" (line 2) which is implied and should be deleted. Correction is required. See MPEP § 608.01(b).

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 12 recites that the at least two relatively moveable parts are platforms of a stator vane. This is inaccurate because as shown in figure 1, the at least two relatively movable parts are platforms 14 of stator *vanes*, not a single stator vane as is claimed. In claim 12, line 2, "a stator vane" should be changed to -- stator vanes -- to correct this.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 6, 8, 10, and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Cromer 5,125,796. Note the sealing arrangement for sealing a leakage gap between at least two relatively moveable parts 28 (see figures 2 and 5) which are adjacent to each other in a flow path between a region of high fluid pressure (inside of element 32) and a region of low fluid pressure (outside of element 30), at least one groove (formed by element 44) being provided along each adjacent face of the relatively moveable parts, wherein the sealing arrangement further comprises at least two resilient sealing strips 40, each strip having a portion 50a, 50b, 52a, 52b formed along at least part of its width to locate in the at least one groove, the remaining portion 54, 56 of each of the at least two sealing strips having a substantially flat surface, the at least two sealing strips being configured such that in operation their substantially flat surfaces abut each other, with the at least two sealing strips being formed such that the portion shaped to locate in the at least one groove is of arcuate cross-sectional configuration, and of "C" shaped cross-sectional configuration. As seen in figures 1 and 2, the seal is disposed around a substantially cylindrical pressure vessel 14 inside of 30, 32. The sealing strips are considered to be aligned substantially in the axial direction of the pressure vessel (claim 8), and aligned substantially at an angle to the axial direction of the pressure vessel (claim 10), because the claims do not specify what the axial direction of the pressure vessel is relative to, and the axial direction may be arbitrarily designated such that the sealing strips are aligned substantially in the axial direction of the pressure vessel, or are aligned substantially at an angle to the axial direction of the pressure vessel. The relatively moveable parts 28 are considered to be seal liner elements, because they form a seal at the adjoining edges of adjacent segments 34 at the downstream end

of the transition pieces (column 4, lines 36-43). The sealing arrangement forms part of a gas turbine engine, and the pressure vessel is a gas turbine engine.

Claims 1-3 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Cromer 2003/0039542 (figures 7-8). Note that the effective filing date of the instant application is March 11, 2004 and the filing date of the foreign priority document is not the effective filing date (see MPEP 706.02(V)(C)). Note the sealing arrangement for sealing a leakage gap between at least two relatively moveable parts 52, 54 which are adjacent to each other in a flow path between a region of high fluid pressure (at the top portion of figure 8) and a region of low fluid pressure (at the bottom portion of figure 8), at least one groove 58, 60 being provided along each adjacent face of the relatively moveable parts, wherein the sealing arrangement further comprises at least two resilient sealing strips 24, 124 (paragraph 35, lines 7-19), each strip having a portion 32, 132 formed along at least part of its width to locate in the at least one groove, the remaining portion 24, 124 of each of the at least two sealing strips having a substantially flat surface, the at least two sealing strips being configured such that in operation their substantially flat surfaces abut each other, with the at least two sealing strips being formed such that the portion shaped to locate in the at least one groove is of arcuate cross-sectional configuration, and of "C" shaped cross-sectional configuration. The sealing arrangement forms part of a gas turbine engine.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cromer 2003/0039542 (figures 7-8). Cromer discloses a sealing arrangement for sealing a leakage gap between at least two relatively moveable parts 52, 54 which are adjacent to each other in a flow path substantially as claimed as set forth above, including a portion 32, 132 formed along at least part of its width to locate in the at least one groove, with the portion shaped to locate in the at least one groove being of "C" shaped cross-sectional configuration. However, Cromer does not disclose that the portion shaped to locate in the at least one groove is of "E" shaped cross section (claim 4), and does not disclose that the portion shaped to locate in the at least one groove is of "W" shaped cross section (claim 5).

The recitation of the specific cross sectional shape of the portion shaped to locate in the at least one groove being "E" shaped or "W" shaped is a matter of choice in design. Applicant has not disclosed that such specific shapes solve any stated problem or are for any particular purpose. Applicant discloses that while the cross sectional shape of the portion shaped to locate in the at least one groove may be of "C" shaped cross section, it may be equally as well of any shape that fulfills the same function, such as either "E" shaped or "W" shaped in cross section (page 4, fourth paragraph of Applicant's specification). Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to form the portions 32, 132 shaped to locate in the at least one groove of Cromer such that they are either "E" shaped or "W"

shaped in cross section, since Applicant has not disclosed that such specific shapes solve any stated problem or are for any particular purpose, and it appears that any curved cross sectional shape for the portions shaped to locate in the at least one groove would perform equally as well in providing a seal between the relatively moveable parts.

Claims 1-3, 7, 9, 11-12, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bowers 3,752,598 in view of Cromer 2003/0039542. Bowers (figures 1-3) discloses a sealing arrangement for sealing a leakage gap 40 between at least two relatively moveable parts 17, 17 in the form of platforms 20 of stator vanes 17 which are adjacent to each other in a flow path between a region of high fluid pressure adjacent 36 and a region of low fluid pressure adjacent 28, at least one groove 44 being provided along each adjacent face 42 of the relatively moveable parts, wherein the sealing arrangement further comprises a flexible sealing strip 50. As seen in figure 1, the sealing strip is disposed around a substantially frusto-conical pressure vessel 15. The sealing arrangement forms part of a gas turbine engine, and the pressure vessel is a gas turbine engine. However, Bowers does not disclose that the sealing strip comprises at least two resilient sealing strips, each strip having a portion formed along at least part of its width to locate in the at least one groove, the remaining portion of each of the at least two sealing strips having a substantially flat surface, with the at least two sealing strips being configured such that in operation their substantially flat surfaces abut each other, with the at least two sealing strips being formed such that the portion shaped to locate in the at least one groove is of arcuate cross-sectional configuration, and of "C" shaped cross-sectional configuration.

Cromer (figures 7-8) shows a sealing arrangement for sealing a leakage gap between at least two relatively moveable parts 52, 54 which are adjacent to each other in a flow path between a region of high fluid pressure (at the top portion of figure 8) and a region of low fluid pressure (at the bottom portion of figure 8), at least one groove 58, 60 being provided along each adjacent face of the relatively moveable parts, wherein the sealing arrangement further comprises at least two resilient sealing strips 24, 124 (paragraph 35, lines 7-19), each strip having a portion 32, 132 formed along at least part of its width to locate in the at least one groove, the remaining portion 24, 124 of each of the at least two sealing strips having a substantially flat surface, the at least two sealing strips being configured such that in operation their substantially flat surfaces abut each other, with the at least two sealing strips being formed such that the portion shaped to locate in the at least one groove is of arcuate cross-sectional configuration, and of "C" shaped cross-sectional configuration. The sealing arrangement is provided for the purpose of providing good sealing of gas flow as the portions formed along the width of the seal are pushed against the grooves, and providing a compliant seal that can accommodate differential thermal growth and assembly misalignment.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to replace the seal 50 of Bowers with the seal arrangement of Cromer, for the purpose of providing good sealing of gas flow as the portions formed along the width of the seal are pushed against the grooves, and providing a compliant seal that can accommodate differential thermal growth and assembly misalignment. Concerning claims 9 and 11, the modified sealing strips are considered to be aligned substantially in the axial direction of the

pressure vessel (claim 9), and aligned substantially at an angle to the axial direction of the pressure vessel (claim 11), because the claims do not specify what the axial direction of the pressure vessel is relative to, and the axial direction may be arbitrarily designated such that the sealing strips are aligned substantially in the axial direction of the pressure vessel, or are aligned substantially at an angle to the axial direction of the pressure vessel.

Claims 1-3, 6, 8, 10, and 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sloop 5,375,973 in view of Cromer 2003/0039542. Sloop (figures 1-4) discloses a sealing arrangement for sealing a leakage gap 32, 32' between at least two relatively moveable parts 19, 19' in the form of seal liner elements which are adjacent to each other in a flow path between a region of high fluid pressure (radially inside 19, 19') and a region of low fluid pressure (radially outside 19, 19'), at least one groove 34, 35 being provided along each adjacent face of the relatively moveable parts, wherein the sealing arrangement further comprises a sealing strip 33. As seen in figure 1, the sealing strip is disposed around a substantially cylindrical pressure vessel in the form of annular flowpath 13. The sealing arrangement forms part of a gas turbine engine, and the pressure vessel is a gas turbine engine. However, Sloop does not disclose that the sealing strip comprises at least two resilient sealing strips, each strip having a portion formed along at least part of its width to locate in the at least one groove, the remaining portion of each of the at least two sealing strips having a substantially flat surface, with the at least two sealing strips being configured such that in operation their substantially flat surfaces abut each other, with the at least two sealing strips being formed such that the portion shaped to locate in the at

least one groove is of arcuate cross-sectional configuration, and of "C" shaped cross-sectional configuration.

Cromer (figures 7-8) shows a sealing arrangement for sealing a leakage gap between at least two relatively moveable parts 52, 54 which are adjacent to each other in a flow path between a region of high fluid pressure (at the top portion of figure 8) and a region of low fluid pressure (at the bottom portion of figure 8), at least one groove 58, 60 being provided along each adjacent face of the relatively moveable parts, wherein the sealing arrangement further comprises at least two resilient sealing strips 24, 124 (paragraph 35, lines 7-19), each strip having a portion 32, 132 formed along at least part of its width to locate in the at least one groove, the remaining portion 24, 124 of each of the at least two sealing strips having a substantially flat surface, the at least two sealing strips being configured such that in operation their substantially flat surfaces abut each other, with the at least two sealing strips being formed such that the portion shaped to locate in the at least one groove is of arcuate cross-sectional configuration, and of "C" shaped cross-sectional configuration. The sealing arrangement is provided for the purpose of providing good sealing of gas flow as the portions formed along the width of the seal are pushed against the grooves, and providing a compliant seal that can accommodate differential thermal growth and assembly misalignment.

It would have been obvious at the time the invention was made to a person having ordinary skill in the art to replace the seal 33 of Sloop with the seal arrangement of Cromer, for the purpose of providing good sealing of gas flow as the portions formed along the width of the

seal are pushed against the grooves, and providing a compliant seal that can accommodate differential thermal growth and assembly misalignment. Concerning claims 8 and 10, the modified sealing strips are considered to be aligned substantially in the axial direction of the pressure vessel (claim 8), and aligned substantially at an angle to the axial direction of the pressure vessel (claim 10), because the claims do not specify what the axial direction of the pressure vessel is relative to, and the axial direction may be arbitrarily designated such that the sealing strips are aligned substantially in the axial direction of the pressure vessel, or are aligned substantially at an angle to the axial direction of the pressure vessel.

*Prior Art*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hutchinson is cited to show a gas turbine engine with a frustoconical casing.

Pask is cited to show segmented stator vanes with gap seals.

Monsarrat is cited to show segmented gas turbine engine stator vanes with gap seals.

Kellock (figure 8) is cited to show a flexible seal with a W-shaped cross section.

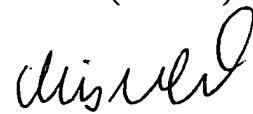
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher Verdier whose telephone number is (571) 272-4824. The examiner can normally be reached on Monday-Friday from 10:00-6:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward K. Look can be reached on (571) 272-4820. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 3745

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

C.V.  
April 11, 2005



Christopher Verdier  
Primary Examiner  
Art Unit 3745